p. 524 #6, 10

6) $\hat{p}_C = 34/40$ $\hat{p}_N = 19/35$

a) completely randomized design

b) Ho: $p_C = p_N$

Ha: $p_C > p_N$

STATE

- 2 indep. SRS
- $n_1\hat{p}_1$, $n_1\hat{q}_1$ $n_2\hat{p}_2$, $n_2\hat{q}_2$ ≥ 10
- $pop_1 \geq 10n_1$ $pop_2 \geq 10n_2$

CHECK

- Assumed
- 34, 6, 19, 16 ≥ 10 ==> NO!

- There are more than 400 patients that will use the acid and more than 350 patients without acid.

Conditions do not check out!

Continue anyway:

$$Z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\frac{\hat{p}\hat{q}}{n_1} + \frac{\hat{p}\hat{q}}{n_2}}} = 2.915$$

$P(Z > 2.915) = 0.00178$

We reject Ho b/c p-value of $0.00178 < \alpha = 0.05$.
We have sufficient evidence that the % of people surviving while using the acid is greater than the % surviving without the acid

(c) reservations = the conditions do not check out!

10) n = 537 $\hat{p}$ = 0.47 = 252/537

(a) STATE

- SRS
- $n\hat{p} \geq 10$
  $n\hat{q}$
- pop $\geq 10n$

CHECK

- stated random sample
- 252 ≥ 10
  285
- there are more than 5370 American adults

Conditions met --> Normal model for 1 prop Z Interval

(a) $\hat{p} \pm z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$ = (0.42706, 0.51148)

We are 95% confident that the true % of American adults who chose the death penalty is between 42.706% and 51.148%.

(b) no, it is not clear. Some of our interval is below 50% and some is higher than 50%, so it is unclear.

(c) $0.02 = 2.326 \sqrt{\frac{(0.5)(0.5)}{n}}$

n = 3382

$0.02 = 2.326 \sqrt{\frac{(0.47)(0.53)}{n}}$

n = 3370